CHAPTER 1
INTRODUCTION

1.1. Background

Universitas Atma Jaya Yogyakarta has been partnering with DELCAM since 2006. It has capability in prototyping using ArtCAM technology for designing the product especially souvenirs and the Roland Model MDX40 for producing the prototype. In 2009 Universitas Atma Jaya Yogyakarta decide to enhance the ArtCam Technology by producing the prototype using spin casting technology.

Spin Casting technology is a method of utilizing centrifugal forces to produce casting from silicone rubber mold. Typically, a disc-shaped mold is spun along its central axis at a set speed. The casting material,usually molten metal or liquid thermoset plastic, is then poured through an open space at top-center of the mold. The filled mold then continues to spin as the metal solidifies aor the thermoset plastic set. (en.wikipedia.org/wiki/spincasting).

The spin casting technology basically need a vulcanized mold to be placed into spin casting machine and also the silicone rubber as the material of the mold. The spin casting machine has been constructed in UAJY in 2007, but it did not use the cured silicon rubber already. It was applied to RTV silicone rubber. The experimental works showed that using uncured silicone rubber in spin casting tend to produce inappropriate shape of products because of its

elasticity. Hence it brings to the need of constructing vulcanizer for spin casting technology, by selecting the appropriate type of silicone rubber to be vulcanized.

Universitas Atma Jaya Yogyakarta efforts to run souvenir production by applying the spin casting technology must be supported by presenting the vulcanizer to obtain vulcanized silicone rubber as the mold. Hence this thesis will present the design phase and construction of vulcanizer after finding appropriate type of silicone rubber, refer to the need of integrating the mold and the spin casting machine itself.

1.2. Problem Statement

Based on the background the problem statement of this research is how to obtain appropriate type of silicone rubber and constructing vulcanizer which will support the spin casting Technology.

1.3. Research Objective

1. Obtain the experimental result of Vulcanized silicone rubber and its casting product.
2. Obtain the design specification and construction of vulcanizer.
3. Obtain the machine cost per hour

1.4. Scope of research

1. Tin is used as a starting material because it’s commonly used in many souvenir products made by spin casting.

2. *Because of the need of appropriate finished mold*, the construction of the vulcanizer will be focused on its components functionality and proper mechanism, therefore ignoring anthropometric data.
3. “UAJY keychain”.will be used as an experimental object in vulcanizing process, considering its relief complexity and double sided shape.
4. The vulcanizer capacity will be limited to 8 molds only considering the production cost and the need of handling medium to large order quantity (more than 500 pieces).
5. The price of vulcanizer is defined price from “Hari Mukti Teknik” Workshop.
6. The vulcanizer will solely be analyzed on its production time and machine cost.

1.5. Research Methodology

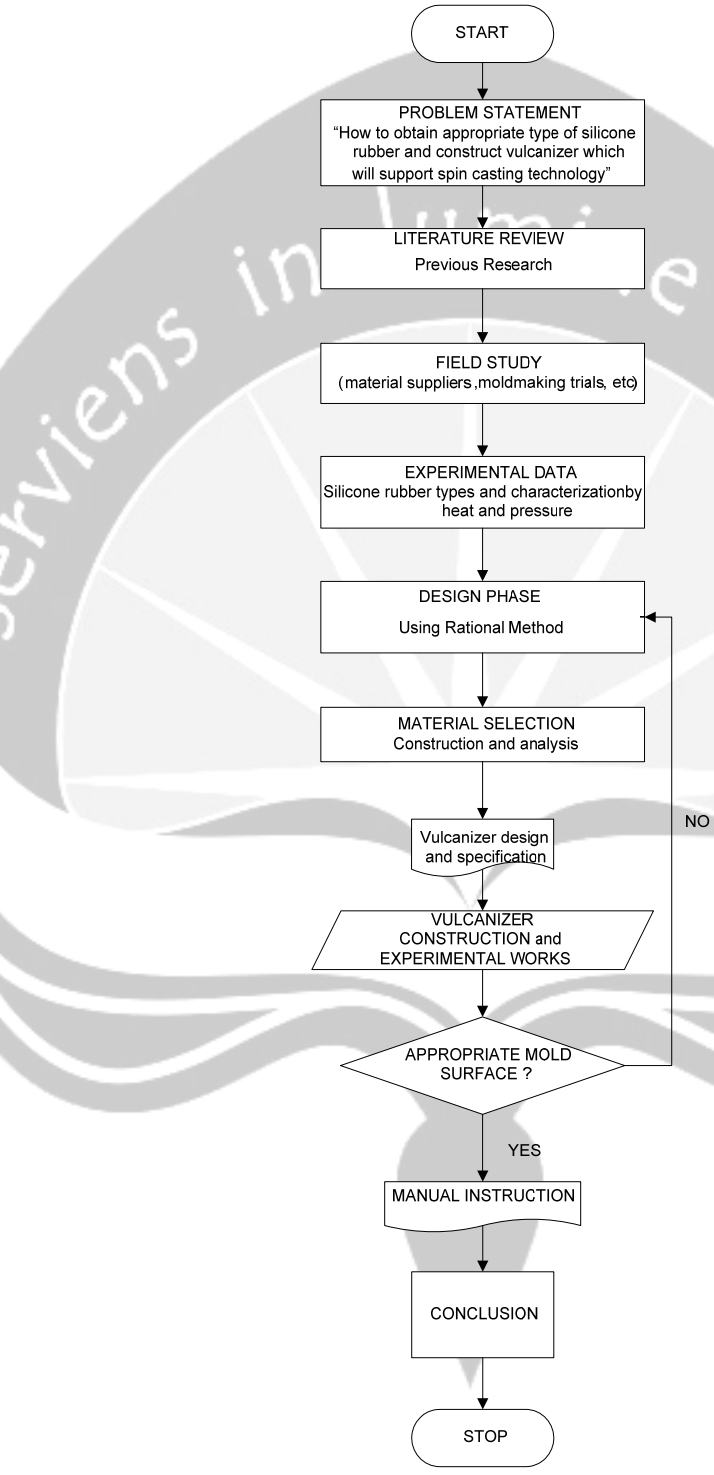

Figure 1.1 Research Methodology Flow Chart

1.6. Report Outline

Chapter I : Introduction

This chapter consist of background, Problem statement, Objectives, scope of research and research methodology.

Chapter II: Literature Review

This Chapter consist of short review of later researches about the vulcanizer and later analysis about this problem.

Chapter III: Basic Theory

This chapter consist of systematical theory about the designing and making the vulcanizer and also describing further about the journal review.

Chapter IV: Data and Analysis

This chapter consist of observed data and collected data.

Chapter V: Designing and the making of vulcanizer

This chapter consist of technical calculation of designing the product, analysis of the making of the vulcanizer, and also the reviewing the result of the performance test of the vulcanizer.

Chapter VI: Manual Instruction

Consist of Specification and the operational procedures of the Vulcanizer unit.

Chapter VII: Conclusion

Consist of short reviewing of the result of the research, Specification of vulcanizer, and also the result of the performance test.